Remarks

Status of Application

Upon entry of the present amendments, claims 35, 37-40, 44-48, 50, 52-71 and 74-79 are pending and at issue in the present application.

In the pending Office action, claims 35, 38, 44-48, 50, 52-69, and 76-78 stand rejected as anticipated by Cosman (US 6405072), claims 35, 37, 38, 44-48, 50, 52-71, 74-79 stand rejected as obvious over Chader et al. (US 5617857) in combination with one or more of Acker et al. (US 6453190), Cosman, Simon et al. (US 2003/0073901), and Moctezuma (US 6306126), and claims 39 and 40 stand rejected as being indefinite under 35 USC § 112. Applicants hereby traverse each of the pending rejections for the reasons provided herein below.

Explanation of Amendments and Support

Claim 35 has been amended to recite that the at least one smart instrument includes a housing, a plurality of LEDs coupled to the housing, a memory circuit having stored information thereon related to the smart instrument, and a first transceiver. Support for this amendment may be found in the specification at least at page 12, line 19-page 14, line 5; page 16, lines 5-14; and original claims 36 and 51. Claim 35 has been further amended to indicate that the sensor array comprises a plurality of position sensors adapted to sense the position information from the LEDs of the smart instrument and at least a second transceiver adapted to communicate wirelessly and bi-directionally with the first transceiver. Support for these amendments may be found in the specification at least at page 10, line 17-page 11, line 9; and at page 19, lines 11-12. Claim 35 has been further amended to indicate that the first transceiver on the smart instrument wirelessly transmits the stored information to the second transceiver on the sensor array, and the second transceiver wirelessly transmits a request from the sensor system to the first transceiver for the LEDs to fire independently one at a time in order to be recognized by the surgery system. Support for these amendments may be found in the specification at least at page 36, lines 1-14.

Claims 37 and 52 have been amended to change dependencies from canceled claims.

Claims 38-40 have been amended to further indicate variously that the transceivers use infrared signals, radio frequency signals, or the IEEE 802.11 communication standard. Support for these amendments may be found at least in claims 38-40 as originally filed.

Claim 58 has been amended to recite that the smart instrument comprises a first housing and a first transceiver and a first plurality of independently fireable lights coupled with the housing, and that the universal tracker device comprises a second housing and a second transceiver and a second plurality of independently fireable lights coupled with the second housing. Claim 58 has further been amended to recite that the sensor system includes a sensor array comprising a plurality of position sensors and at least a third transceiver adapted to communicate wirelessly with each of the first and second transceivers. Claim 58 has been further amended to recite that the surgery system cycles consecutively through each of the smart instrument and the universal tracker device, and that, for each of the smart instrument and the universal tracker device, the surgery system wirelessly sends a signal identifying the smart instrument or universal tracker device, the smart instrument or universal tracker device wirelessly sends status information to the surgery system, and the surgery system sends a request that the respective smart instrument or universal tracker device fire each of the respective first or second pluralities of lights independently one at a time in order to be recognized by the surgery system. Support for these amendments to claim 58 may be found in the specification at least at the same locations as indicated for claim 35 and also at page 11, line 21-page 14, line 5 and at page 21, lines 4-9.

Claim 59 has been amended to be consistent with base claim 58.

Claim 62 has been amended to indicate that the universal tracking system includes a hall effect switch that is affected by proximity to the patient tracking system and a wireless communication transceiver, and that the universal tracking system transmits a status of the hall effect switch to the surgery system, whereby the surgery system determines that the universal tracking system is being used as part of the patient tracking system. Support for these amendments may be found in the specification at least at page 14, lines 9-12.

Claim 63 has been amended to indicate that the sensor array includes a plurality of position sensors, and that each of the smart instruments comprises a housing, a plurality of LEDs coupled with the housing and adapted to fire independently, and a first transceiver, wherein, for each of the smart instruments in consecutive order, the respective second transceiver wirelessly transmits an instruction from the sensor system to the respective first transceiver thereof that causes the LEDs thereof to fire independently one at a time in order to be recognized by the surgery system. Support for the amendments may be found at least as indicated previously regarding the amendments to claims 35 and 58.

Dependent claim 68 has been amended to indicate that the surgery system cycles successively through all of the smart instruments that are active and temporarily sets the number of LEDs to be activated on an unused active smart instrument to zero. Support for this amendment may be found in the specification at least at page 36, lines 17-24.

Claim 69 has been amended to state that the smart instrument includes a housing and coupled with the housing a first transceiver and a plurality of LEDs adapted to fire independently, and that the sensor system is adapted to wirelessly sense the position of the at least one smart instrument and the position of the sheet. Claim 69 has been further amended to indicate that the sensor array includes a plurality of sensors and a second transceiver, and that the second transceiver wirelessly transmits an instruction from the sensor system to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Support for these amendments may be found in the specification at least as indicated previously regarding claim 35 and 58.

Claim 76 has been amended to indicate that the light emitting diodes are on a first side of the flexible material and that the smart instrument also includes a wireless transceiver coupled with the flexible material. Claim 76 has also been amended to indicate that the sensor system includes a plurality of position sensors and wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Support for these amendments may be found in the specification at least at page 28, lines 10-11, which describes a sheet of flexible material that "is a smart instrument" having light emitting diodes, and at page 10, line 8-page 11, line 9, which describes smart instruments as communicating wirelessly, such as with transceivers, and further at page 36, lines 1-14, which describes a system with a smart instrument that fires off each LED one at a time in order to be recognized by the system.

Claim 79 has been amended to recite that the at least one smart instrument has a housing, and coupled with the housing, at least one control button, a plurality of LEDs, and a first transceiver. In addition, claim 79 has been amended to recite that the sensor system wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Support for these amendments may be found in the specification at least as indicated with respect to claims 35 and 58.

Support for new claim 80 may be found at least in the specification at page 10, lines 17-21.

No new matter has been added by way of the present amendments.

Reasons for Traversals

The amendments to claim 35 and claims 38-40 relating to the type of transceiver claimed overcomes the indefiniteness rejections under 35 USC § 112 because there is now no conflict between the generic transceiver recited in claim 35 and the specific types of signals used by the transceivers as recited in the dependent claims 38-40. Therefore, it is request that the § 112 rejections of claims 39 and 40 be withdrawn.

With respect to claims 35, 37-40, 44-48, 50, 52-57, none of the applied references alone or in combination discloses or suggests a surgery system comprising a smart instrument one smart instrument and a sensor system, as recited in claim 35, wherein the first transceiver on the smart instrument wirelessly transmits the stored information to the second transceiver on the sensor array, and the second transceiver wirelessly transmits a request from the sensor system to the first transceiver for the LEDs to fire independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the rejections of claim 35, and claims 37-40, 44-48, 50, 52-57 dependent thereon, be withdrawn.

With respect to claims 58-61, none of the applied references alone or in combination discloses or suggest a surgery system comprising a smart instrument and a universal tracker device, as recited in claim 58, wherein the surgery system cycles consecutively through each of the smart instrument and the universal tracker device, and that, for each of the smart instrument and the universal tracker device, the surgery system wirelessly sends a signal identifying the smart instrument or universal tracker device, the smart instrument or universal tracker device wirelessly sends status information to the surgery system, and the surgery system sends a request that the respective smart instrument or universal tracker device fire each of the respective first or second pluralities of lights independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the pending rejections of claim 58, and claims 59-61 dependent thereon, be withdrawn.

With respect to claim 62, none of the applied references alone or in combination discloses or suggest a surgery system including a smart instrument and patient tracking system, wherein the patient tracking system includes a universal tracking system that includes a hall effect switch that is affected by proximity to the patient tracking system and a wireless communication transceiver, wherein the universal tracking system transmits a status of the hall effect switch to the surgery system, whereby the surgery system determines that the universal tracking system is being used as part of the patient tracking system. Therefore, it is requested that the rejection of claim 62 be withdrawn.

With respect to claims 63-68, none of the applied references alone or in combination discloses or suggests a surgery system comprising at least two smart instruments and a sensor system, as recited in claim 63, wherein, for each of the smart instruments in consecutive order, the respective second transceiver of the sensor system wirelessly transmits an instruction from the sensor system to the respective first transceiver of the smart instrument that causes the LEDs thereof to fire independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the rejections of claim 63, and claims 64-68 dependent thereon, be withdrawn.

With respect to claims 69-71, none of the applied references alone or in combination discloses or suggests a surgery system comprising a smart instrument including a housing and coupled with the housing a first transceiver and a plurality of LEDs adapted to fire independently, as recited in claim 69, wherein the second transceiver of the sensor system wirelessly transmits an instruction from the sensor system to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the rejections of claim 69, and claims 70 and 71 dependent thereon, be withdrawn.

With respect to each of independent claims 74 and 75, the rejections thereof are based on combination with Moctezuma, which only applies as prior art, if all, under 35 USC § 102(e).

However, Moctezuman and the invention of claims 74 and 75 were subject to assignment to the same entity at the time of the invention of claims 74 and 75, and therefore, Moctezuma is not eligible for use in the 103(a) rejection of claims 74 and 75. The remaining applied references do not supply the deficiencies left from the removal of Moctezuma. Therefore, it is request that the rejections of claims 74 and 75 be withdrawn.

With respect to the claims 76-78, none of the applied references alone or in combination discloses or suggests a surgery system comprising a smart instrument being composed of a flexible material and having a plurality of light emitting diodes on a first side of the flexible material and a wireless transceiver coupled with the flexible material, and a sensor system having at least a second transceiver, wherein the sensor system wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the rejections of claim 76, and claims 77 and 78 dependent thereon, be withdrawn.

With respect to claim 79, none of the applied references alone or in combination discloses or suggest a surgery system comprising at least one smart instrument and a sensor system, wherein the at least one smart instrument includes a housing and coupled with the housing at least one control button, a plurality of LEDs, and a first transceiver, wherein the sensor system includes at least a second transceiver, and wherein the sensor system wirelessly transmits an instruction from the second transceiver to the first transceiver that causes the LEDs to fire independently one at a time in order to be recognized by the surgery system. Therefore, it is requested that the rejection of claim 79 be withdrawn.

Discussion of Applied References

Cosman discloses a system for positioning a patient's body during radiation treatment so that a beam of radiation from a linear accelerator precisely hits a desired target within the patient's body while the patient is lying on a couch. The system uses a camera system that senses markers placed on the patient, markers placed on the linear accelerator, and markers placed on the couch, in order to sense the position of each. Although the markers themselves are disclosed as being an infrared light source, there is no disclosure or suggestion of any sort of relevant control of the infrared lights from the camera system. Further, there is no suggestion of any need to control any firing of the infrared lights, whether independently or otherwise, because there are only three known items being tracked by the system, and therefore, there is no need to be able to identify new instruments coming into a field of view of the cameras because the system is only required to track three items. Therefore, for at least these reasons, there would be no reason in the prior art to modify Cosman in a manner as recited in the various claims.

Chader et al. discloses a tracking system for a medical instrument including a sensor assembly, a reference frame that is secured to a patient, and a medical instrument. Each of the reference frame and the medical instrument has a plurality of LEDs that are viewed by the sensor assembly. The medical instrument includes a memory module that is hard-wired to a processor in order to transfer data about the medical instrument to the processor. In another embodiment, the medical instrument is attached to a tracker attachment, which in turn is hard-wired to the processor. In the other embodiment, it is suggested to use a Hall sensor to detect whether an instrument has been properly initialized after having been connected with a tracker attachment. However, there is no disclosure or suggestion of independently firing the LEDs of the medical instrument or tracker attachment in response to a signal sent from the processor, or of using the Hall sensor to determine how the medical instrument is being used within the overall system. Further, there would be no reason to modify the system of Chader et al. in such a manner because the hard-wired connection allows direct hardwired transfer of data for the processor to recognize the medical instrument or without requiring any further modifications.

The remaining applied references, Acker et al., Simon et al., and Moctezuma, do not overcome the deficiencies in the Cosman and Chader et al. references pointed out above.

Therefore, it is believed that all of the claims at issue are in position for immediate allowance.

Conclusion

All of the pending objections and rejections having been fully addressed and overcome herein, applicants respectfully request reconsideration and withdrawal of all of the pending rejections and allowance of the claims at issue.

If there are any issues remaining that can be resolved by telephone, the examiner is invited to call the undersigned.

Respectfully submitted,

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May 14, 2009

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